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Shoreham - 70 miles too close to New York City - must not be allowed to operate. Here's why and how.

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# Time To Get A Move On

by Susan Edelman

NYC SHAD has moved from its office on Lafayette Street. We realized that so much of the fund-raising money was going for paying office rent that it was hard to come up with money to pay for our newsletter or postage once it had been printed. Important information was being sent out to you late! We decided it made more sense to have a "floating office" - each of us now volunteers to host meetings in our own homes and we maintain a post office box and telephone with an answering machine to provide steady locations for information requests. The address is Box 279, Rockefeller Center Station, New York, NY 10185 and the phone number is (212) 772-3142.

Here in New Rising Sun you can find out what the SHAD Alliance is working on and how you can get involved. What needs your involvement most right now is the Stop Shoreham Campaign to prevent the Shoreham nuclear power plant from going on line (see page 10). We will soon have a leaflet concerned with this and you are needed to get it out to as many people as possible. By calling our phone number you can make arrangements to pick up some leaflets to distribute , but FIRST we need money to get the leaflet printed and that really calls for your immediate support!

Everyone contributing $10.00 or more to the campaign will get a free one-year subscription to New Rising Sun. Your articles, research, cartoons and such are always welcome contributions as well, and we will now have a Question and Answer section where you can ask us anything you've always wanted to about nukes. So please help keep New Rising Sun alive and have a place to put your by-line.

The SHAD Alliance
invites you to participate in the

Stop Shoreham Blockade

Help prevent the Shoreham nuclear power plant from going on line. The action will take place at the Shoreham site

Dress as you wish. C.D. training is required {and will be provided} for those who intend to take part in the C.D.

Your attendance is welcome, appreciated, and necessary

R.S.V.P. (212) 772-3142

or write: SHAD, Box 279
Rockefeller Center Station
New York, New York 10185

Thank you to the never-setting staff of New Rising Sun. Thank you Toby, Amy, Susan, Jacob, Bill, Ken, Talbot, Russ, Carol, and guest writers Dr. Kaku and Reverend O'Connell.

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# NUCLEAR AWARENESS

by Talbot Katz

The fundamental principle behind nuclear fission power generation is at once simple and awesome. Atomic nuclei are bound together very strongly and the energy required to break the bond is so great that the reaction itself liberates huge amounts of energy: enough to keep the reaction going so long as fuel (i.e., fissionable material) remains, with plenty to spare to convert into electricity. When the Eisenhower administration launched the "Atoms for Peace" program in the mid 50s, promises of clean energy produced at a cost "too cheap to meter" created an irresistable wave of enthusiasm for the new technology, and, with generous federal subsidizing, the nuclear industry soon mushroomed.

Today nuclear power has reached a crossroads in the U.S. Although the Reagan National Energy Policy Plan continues to sing the praises of nuclear reactors, no new reactors have been ordered since 1978, 41 have been canceled and many more have been postponed. We must make crucial decisions about which long-range directions our National Energy developments will take. Nuclear power presents us with complex dilemmas demanding immediate attention.

1. Is nuclear power safe or can it be made safe?
2. Is nuclear power economical, and how does it compare with the costs of alternative energy technologies?
3. Is nuclear power necessary to meet the U.S.' and world's energy needs?
4. How does the nuclear power industry tie in with other sectors of the economy, particularly the military?

Unfortunately, the maze of conflicting claims surrounding nuclear power leaves many of us scratching our heads in bewilderment. Although the technical details of nuclear power generation and distribution require advanced training in physics or engineering to be truly understood, the aspects of nuclear power production which pertain to us as individuals and consumers are accessible. We at SHAD believe that the more we know about nuclear power, the better equipped we are to deal with it. With that in mind, New Rising Sun begins a series of articles designed to give our readers an overview of the current state of the nuclear power controversy by identifying and examining each major component issue (of course, none of these issues can be completely divorced from the other). The first two articles will concentrate on the issue which should be of foremost concern to us all: the safety of nuclear power.

## Spotlight on Safety

The greatest danger posed by nuclear energy is exposure to hazardous amounts of radiation. The two major possible sources of such exposure are

1. Radiation released from the plants themselves, especially when accidents occur and
2. Radiation released from spent nuclear fuel which has been "discarded."

Recent work of Dr. John Gofman in Maryland indicates that even supposedly low levels of radiation exposure, such as the amounts received from routine medical and dental x-rays, may be quite harmful. Yet a recent accident at the Dresden 2 nuclear plant in Illinois exposed a worker to 21 rems, which is comparable to over 1,000 chest x-rays.

### PLANT SAFETY - THE RECENT RECORD

The worst possible accident at a nuclear plant - a full meltdown - thankfully has never occurred. Such as accident could irradiate an area the size of Pennsylvania (45,333 square miles) and cause thousands of deaths. It took the serious partial meltdown at Three Mile Island to really raise public alarm, but a recent study by the NRC (Nuclear Regulatory Commission) has identified at least 169 potential potential meltdowns between 1969 and 1979 due to machine malfunctioning, human error, or both. Such a history hardly reassures us despite the industry's proclamations about safety.

In 1981, with 74 plants on line, over 4,000 mishaps exceeding technical design specifications occurred. (each time such a mishap occurs, the nuclear plant must file a Licensee Event Report (LER) with the NRC.) That represents an increase of about 900 events from the year 1979 although only four new plants came on line in the intervening period. Some of the most serious incidents of 1981 and 1982 include

- The incident at Ginna (see Professor Kaku's article in this issue)
- The sabotage of the emergency core cooling system at Beaver Valley (Pennsylvania)
- A fire at the North Anna 2 (Virginia) reactor that disabled emergency systems which power safety-related instruments.
- A leak of 110,000 gallons of radioactive coolant at the Sequoyah I (New York) plant which contaminated eight workers and risked exposure of the reactor's atomic core.

The NRC has penalized several facilities for violations of federal regulations:

- The TVA (Tennessee Valley Authority) was fined $50,000 for a significant programmatic breakdown in one of its plants fire protection systems,
- Consumer Power of Michigan received a $450,000 fine for leaving containment isolation valves open,
- Con Ed was fined $210,000 for violations discovered in the aftermath of the flood at Indian Point II (chronicled in the first issue of New Rising Sun),
- Houston Lighting and Power received 22 notices of violation and a $100,000 fine for their South Texas Project.

The delays and violations continue. Two years after the TMI (Three Mile Island) accident, half of the U.S. nuclear plants had failed to meet the NRC's post-TMI safety requirements. A year after the NRC required 48 plants to have public emergency warning systems installed, only six had complied; 17 others had not even ordered the equipment by the deadline. In **all** cases, the NRC deferred enforcement of its ruls when faced with non-compliance.

A report released October 20, 1981 by the House Government Operation Committee concluded that "safety-related NRC programs and the inspection of operating nuclear reactors -- the true mission of the NRC -- have remained behind schedule at the same time the NRC's attention has been devoted to the supposed problem of licensing delays." Furthermore, the report charged that the NRC's efforts to circumvent public participation in licensing proceedings "have not been in the best interests of the public..." This means that the NRC is devoting its time to speeding up reactor licensing instead of reactor safety.

## SAFETY PROBLEMS AT NUCLEAR FACILITIES

Even if operator errors could be completely eliminated, nuclear technology demands unyielding perfection. Events such as the one at Ginna, where one small tube out of thousands burst due to corrosion, demonstrate the difficulty of achieving design perfection. Although highly talented engineers have worked on the design and construction of nuclear plants, several plants seem to fall short of minimal safety standards:

- Nine Mile One, which began operation in 1969, has developed leaks in piping and cracks adjacent to the main recirculation pumps,
- five key safety systems at Diablo Canyon may be defective due to a mix-up in the blueprints,
- at least 20 operating pressurized nuclear reactors have generic flaws related to progressive deterioration of steam generator tubes.

Any of these failures could result in the release of radioactivity to the environment.

Another problem which began to receive attention is embrittlement of the reactor vessel, leading to possible ruptures. As many as 44 U.S. plants may show evidence of embrittlement. Embrittlement occurs because the constant bombardment of the vessel walls by highly energetic neutrons wears down the walls and makes them susceptible to small cracks. This process is happening about four times faster than anticipated. The appearance of cracks increases the danger of rupture and cracks can be very difficult to detect. Rupture of the reactor vessel could result in such large-scale melting of the core that the containment building could not stop the radiation release. An NRC Reactor Safety Study has projected a possible 48,000 deaths, 280,000 injuries and $14 billion in property damages in the wake of such an accident. A 1982 study predicts even worse consequences: over 100,000 early deaths and hundreds of billions of dollars in property loss.

Next issue: Waste disposal and safegueards.

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## Future Features

Even as you read this, work has already started on New Rising Sun #7. Next issue will contain

1. An update on the Stop Shoreham Campaign
2. An easy to make solar space heater. You don't need to be an engineer or a millionaire to use solar energy
3. Information on the municipal utility referendum passed by New York City voters this past election. Pro and con viewpoints will be presented in one comprehensive article.
4. Hydroelectric power is cheap, safe and plentiful. In the case of "mini-hydro" its decentralized. We will have an overview of small hydro.
5. Our question and answer section will begin. Send in questions about nuclear power, nuclear weapons, alternative energy and other environmental issues. If the SHAD volunteers don't already know, we can find out. Try us!
6. Our letters page resumes next issue after we hear from you!

The Spotlight of Safety series continues with an article on nuclear waste disposal and plant safeguards.

The nuclear industry has started advertising on TV. A group of utilities, calling itself the "Committee for Energy Awareness," is telling us that nuclear power is safe. They're even going to tell us that the rate hikes nuclear power brings are good for our future. They feel that if they assail us with these opinions, we'll convert.

We don't have to match the nuclear industry dollar for dollar. Another group, the Safe Energy Communications Council, is helping groups like SHAD to combat these ads with ads of our own by putting the FCC Fairness Doctrine to good use.

Test-marketing has already been done; soon the pro nuke ads will be shown nationally. If you see one, tell us (at (212) 772-3142). Also mention this to co-workers, fellow students, parents and friends. This issue of New Rising Sun contains enough information to help inform anyone. Call SHAD for even more information. Don't let those ads go unchallenged!

# New York City's Pentagon Tax

by Rev. Brian J. O'Connell

We take defense taxes for granted because they are such an established part of our lives. We have made the decision for guns without much conscious awareness of the costs. The fiscal problems of our cities may be, in part, one of the long-term costs of these easy decisions.

A consciousness of the total cost of defense can be a healthy stimulus to a critical evaluation of the military budget, no matter what stance a person takes on military policy. New York has been forced to tighten its budget even for essential services partly because it could not impose further tax burdens on its people, but there is little pressure from any quarter to close the budget gap caused by tax dollars leaving the City for the Pentagon.

Military spending increases of eight percent over the cost of inflation for each of the next five years could impose a burden on New Yorkers far greater than any tax or spending decision that is likely to be made by the New York City government. In fiscal year 1983, by one estimate, the amount of dollars leaving the pockets of New Yorkers for defense expenditures will exceed the eight billion dollars-plus which the City of New York expects to collect in all its property, sales, corporate, stock transfer and other taxes.

One method of estimating the defense tax for New Yorkers is simply dividing defense expenses by the total population of the country (231,173,000, 1982 census bureau estimation) and multiplying the per capita figure by the population of the city (7,013,400 estimated by the sate Department of Health for 1982). In President Reagan's proposed budget for fiscal 1983, $215.9 billion is allocated for the Department of Defense. This amounts to $933 for each person in the country and $6.54 billion from the residents of New York City. If the other elements of actual current military costs such as portions of space research, foreign military assistance and arms credits spending are included, then the per capita cost for all U.S. citizens is $1,103 and $7.7 billion comes from New Yorkers.

The national per capita measure understates the defense tax for New Yorkers. For 1976, Charles Brecher and Kurt Katzman calculated that New York City contributed four percent of federal tax revenues. Since New York City had less than three and a half percent of the nation's population at that time, New Yorkers were paying more than the per capita national average. For 1975, the Regional Plan Association estimated that 4.9 percent of all federal, payroll and and corporation taxes came from New York City. In 1982, the City is just over three percent of the population, paying about 3.43 percent of U.S. taxes.

Using the more conservative Brecher and Katzman formula, New Yorkers will pay $7.9 billion for Department of Defense expenditures ($9.65 billion using Regional Plan Association formula) and $8.98 billion for all military expenses ($10.85 billion using RPA formula) in 1983. Koch anticipates $8.54 billion in revenues from all City taxes in fiscal 1983; more money will leave the pockets of New Yorkers for current military spending than for City Hall. New York receives only 1.9% of national defense contracts, and an even smaller percentage of military pay.

The gap will widen if Reagan is successful in getting a desired seven to eight percent yearly increase after inflation in Defense Department budgets until 1986.

The defense tax will be more than enough to pay for the three biggest service lines in Koch's budget, namely, $3.4 billion for social services, three billion for education, and $838 million for police.

A comparison with church contributions provides another eye-opener. In 1979, New Yorkers paid $614 per capita for the Defense Department (using Brecher & Katzman. $752 using Regional Plan Assoc.). Meanwhile, the 1,338,554 Catholics in the Catholic Diocese of Brooklyn (which also includes Queens) gave $41.44 per capita in contributions, bequests and fund-raising responses. For each dollar put in the collection plate that year, $14.81 went to the Department of Defense through various taxes. The ratio would be greater than $17.00 to the dollar if all defense costs were included. In 1983, Defense costs will be nearly double (1.8%). It is unlikely that Church donations will increase proportionately.

Rev. Brian J. O'Connell is an associate professor of sociology at St. John's University, whose research areas include urban employment and housing. This article originally appeared in the October, 1982 issue of City Limits and is reprinted with their generous permission.

# GINNA - Beginning of the End for Aging Reactors

By Dr. Michio Kaku, Prof. of Nuclear Physics, CCNY

In some sense, the accident at the Robert E. Ginna nuclear plant 16 miles northeast of Rochester, N.Y. is more significant than the Three Mile Island accident. The TMI accident generated great publicity and fanfare in the media, but it has been argued by the nuclear industry, with some merit, that the TMI accident was an exotic, rare type of accident that doesn't easily generalize to all reactors.

The TMI accident occurred in a new, barely 3-month-old reactor via a never-seen-before sequence (almost Rube Goldberg-like) that evaded the government's massive study of 1975 (WASH-1400). With some justification, it can be said that TMI doesn't necessarily indict the entire industry.

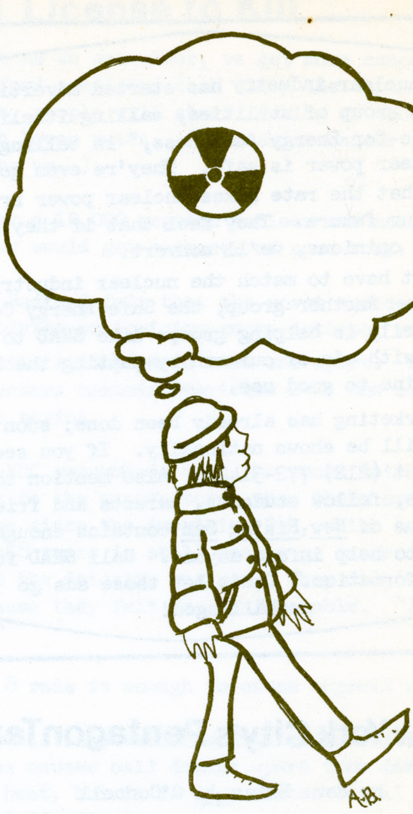
The Ginna accident is a textbook Class 8 (design basis) accident. The usual Class 8 accidents are ruptures in the steam generators or a double-ended guillotine-like break in the tube of the primary coolant. A Class 8 accident assumes that the emergency systems work to prevent radiation from escaping into the environment. A Class 9 accident, like TMI, includes the meltdown, and is defined as "beyond design basis" (i.e. radiation breeches the three main lines of defense: the fuel rods, the vessel, and the containment). That is the real significance of the Ginna accident. It is important by its very ordinariness. Fortunately, although the reactor operators acted slowly, they didn't make any stupid mistakes. The Ginna type accident is studied at length in considerable detail by WASH-1400. It is a classic accident of an aging reactor (10 years old) with a ruptured steam generator. Virtually hundreds of computer programs have been written over the last ten years depicting the Ginna-type accident.

The real significance of the Ginna accident, then, is that it is the beginning of the end for aging reactors. Instead of their reputed 40 year life span, reactors are now aging so rapidly, especially in their steam generators, that reactors may be put to pasture much sooner than advertised, at enormous loss to the consumer.

The Ginna plant is a pressurized water reactor. The core, containing the uranium, is cooled by a primary cooling loop which the reactor heats to hundreds of degrees. This in turn is cooled by a secondary loop. At hundreds of degrees the water in the primary loop would boil and lose its cooling ability, so it is kept at a pressure of two thousand pounds per square inch. Simply put, the accident at Ginna started because of rapid corrosion in the tubules of the steam generators (which separate the radioactive primary coolant loop from the non-radioactive secondary loop). The primary water began to leak into the secondary system and lost pressure rapidly. Because of the rapid depressurization, water in the primary began to boil, causing a steam bubble which gradually expanded within the reactor vessel. There are conflicting reports (mainly because the industry is too cheap to put a meter in the reactor vessel telling you how much water there is in the vessel),but there are indications that an expanding steam bubble has the potential of eventually uncovering the core, with disasterous results.

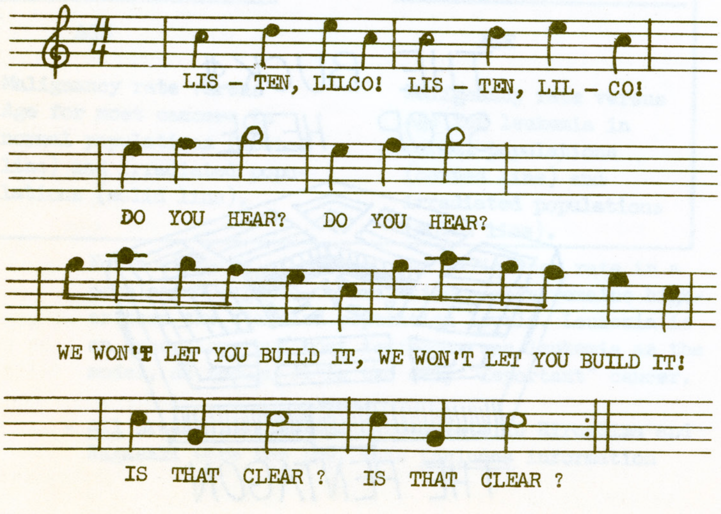
The Ginna accident, then, is a forwarning of a series of Class 8 accidents around the country, especially since aging reactors are showing signs of deterioration. The NRC has already singled out over 34 reactors that have problems similar to the Ginna plant. (In fact, the industry's think tank, the Electric Power Research Institute, singled out steam generator corrosion problems about five years ago as being an urgent area of concern.)

It was incorrectly mentioned in the media at the time of the accident that the embrittlement problem caused the Ginna accident. Embrittlement is one of the main problems with aging reactors, but has little to do with steam generator failures. Embrittlement was singled out over ten years ago by the British Atomic Energy Authority in its investigation of Westinghouse pressure vessels. The British government wouldn't purchase Westinghouse reactors for many years because of concern over embrittlement problems. Embrittlement occurs because of the intense bombardment in containment vessels by neutrons from the uranium chain reaction. The molecular structure of the reactor steel becomes damaged over years of radiation exposure (i.e. the average neutron will knock roughly 20 atoms out of place before coming to rest). After decades of exposure, the metal simply becomes too weak to withstand rapid changes in temperatures (such as occur when emergency core cooling system water is dumped onto a melting core, during an emergency, causing enormous temperature changes within the reactor steel.) Of course, if the reactor vessel, weighing over 400 tons, has to be replaced, it would be like replacing the engine of your car. It may be cheaper to simply buy a new reactor than replace an aging reactor vessel.



# Listen LILCO

To the tune of Frère Jacques.


LIS - TEN, LILCO! LIS - TEN, LIL - CO!
DO YOU HEAR? DO YOU HEAR?
WE WON'T LET YOU BUILD IT, WE WON'T LET YOU BUILD IT!
IS THAT CLEAR ? IS THAT CLEAR ?

From the Anti-Nuclear Songbook

The point here is that none of these problems are new. In fact, physicists pointed out these problems of steam generator ruptures and embrittlement decades ago. These problems were not supposed to haunt us for several decades, and already they are occurring at an alarming rate in our reactors, especially those over ten years old.

## Addendum

Since Professor Kaku wrote his article, several more facts about the Class 8 Accident at Ginna have been uncovered, which we will pass on to you. Our source is the Sierra Atlantic, Volume 9, Number 3.

The Ginna accident of January 25, 1982 escalated to a Class 8 Accident when plant operators attempted to bring the plant to a "cold shutdown" (a more complicated procedure than just flipping a switch). One of several thousand small tubes leading to the primary steam generator burst after having been worn thin beyond endurance. Radioactive water from the primary system began leaking into the non-radioactive secondary system at a rate of 700 gallons per minute.

The corrosion problem in the tubes dates back to 1976, when several tubes which had already developed small leaks were plugged up. The cause went undetected at that time. Investigations after the January 25 accident revealed that small pieces of metal had been left in the steam generator during removal of flow restrictors in 1975. Apparently, these shards worked away at the tubes like hacksaws.

After the tube had ruptured, rapid depressurization of the primary system ensued. The problem escalated due to the following untimely combination of equipment failures and operator errors:

(1) A pressure release valve in the primary system remained stuck in the open position, allowing depressurization to continue. This caused steam bubbles to form in the reactor vessel head and in the line to the pressurizer.

(2) Fearing that steam bubbles might uncover the reactor core and expose the fuel, as Dr. Kaku has written, operators kept emergency water flowing into the primary system for too long a time, forcing radioactive water to continue flowing through the broken tube into the secondary loop.

(3) The excess water in the secondary loop flooded the steam generator and then flooded the secondary loop piping, which is designed to handle only steam. Luckily, the pipes did not break.

(4) Operators incorrectly blocked the pressure valve on the secondary loop, causing another safety valve to lift to reduce the pressure. This valve was not designed to handle flood water and failed to close fully, releasing radioactive water directly into the environment for 50 minutes at a rate of 100 - 200 gallons per minute.

(5) The flooding caused equipment which should prevent the release of radioactive iodine through the safety valve to misfunction, and much more water was released than had been estimated in NRC studies.

(6) Operators incorrectly cut off flow of water to the condenser, which forced the secondary loop to release steam directly to the environment in order to cool the reactor. Fortunately, tubes in the secondary system did not leak, so this steam did not contain radioactivity.

A Class 8 designation requires evacuation of non-essential site personnel from the plant. Ironically, these employees were evacuated directly into the path of the radiation release. The message of Ginna is a chilling one: Small oversights and misjudgements in nuclear plants have unforeseen serious consequences.

Nuclear reactors, although they have numerous overlapping systems, nonetheless operate with thin margins of safety. The simplest misreading of gauges (such as misreading the Power Operating Relief Valve gauge at TMI by the reactor operators) can lead to dangerous miscalculations about the Emergency Core Cooling System, have been used successfully at accidents (including Ginna) to prevent accidental uncovering of the core. But the point is that nuclear technology is an unforgiving technology: within a mere hour of uncovery, the core of a reactor (because of the enormous quantity of heat generated after the uncovery - about 200 thermal megawatts) can melt down. The problem, however, is that the ECCS has never been fully tested.

In theory, the problem of aging reactors can be solved within the framework of design basis accidents, i.e. we assume all emergency systems work. By definition, a Class 8 accident does not breech the three layers of safety. Unfortunately, our confidence in reactors is not increased by the fact that the ECCS system has only been tested on computer (in two dimensional problems, which sometimes show ECCS failure) and in mock-up tests, like the Loss of Fluid Test in Idaho, based on a reactor about 1/50 the size of a modern reactor.

Normally, I wouldn't be concerned about aging technologies. After all, we have aging dams and aging airplanes. But the point here is that dams and planes have been crashed and extensive scale modeling has been done. A reactor has never been crashed. Physicists have for decades asked the government for money to run a reactor to destruction. Cars and airplanes have been crashed, but not reactors.

Scale modelling of reactor accidents may not have much validity. Consider the fundamental fact that all reactors are nothing but sophisticated scaled-up versions of the original Nautilus, the very first nuclear submarine, inspired by Admiral Rickover. Simply scaling up a sixty megawatt Nautilus reactor to the gigantic 1,000 megawatt reactors of today causes numerous scaling problems. For example, if I double the size of a reactor, the heat generated by the reactor goes up by a factor of 8, because the volume goes up by 8 ($8 = 2^3$). But the surface area, which is related to the ability to cool the reactor, goes up by a factor of 4 ($4=2^2$). In other words, scaling a reactor by a factor of 2 makes it 2 times harder to cool down the core. The bigger the reactor, the more water must be rammed through the cooling pipes to give the same amount of cooling. Reactors designed by Rickover were relatively easy to cool; reactors of today are notoriously hard to cool, and instead must have thousands of gallons pumped at great velocity through the core.

That is why I say that the TMI accident is, in some sense, not as important to the eventual future of nuclear power plants as the Ginna accident. All reactors, at some point, will encounter the aging problems that have been the focus of government research for decades. The only difference is that we are experiencing these problems much faster than anyone had ever suspected.

In this sense, nuclear is not only an unforgiving technology, it is also an unfinished technology.

# "The Current Exposure Level is a License to Kill"

That's just one of the statements Dr. Edward P. Radford made early in 1982 at a conference sponsored by the Physicians for Social Responsibility. Dr. Radford is not your typical anti-nuclear speaker. For one, he was pro-nuclear "until the revelations from Three Mile Island." And he still believes what he reads in NRC reports. His credentials are impeccable: Chairman of the National Academy of Sciences' Advisory Committee of the Biological Effects of Ionizing Radiation (BEIR III); Director of the Center for Environmental Epidemiology, Graduate School of Public Health, University of Pittsburgh; Graduate of Harvard Medical School; pre-med at M.I.T. and he served in the Air Force and witnessed an A-bomb test in the Pacific.

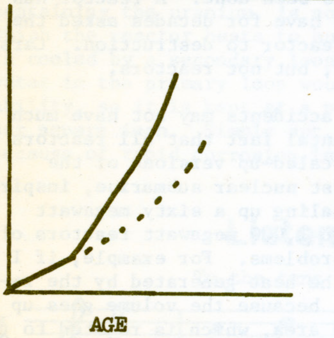
The slide and lecture program he gave was fascinating, revelatory and a little unnerving. We have more information on the effects of radiation on people based on actual human beings than almost any other hazard. Dr. Radford brought a big chunk of that information with him:

- There is indeed data showing no minimal safe level of radiation exposure.

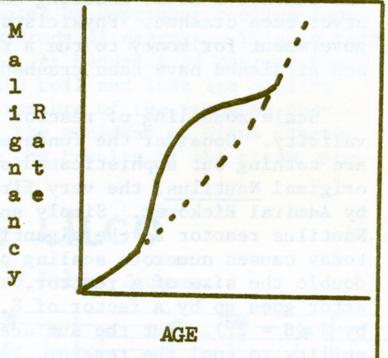
- No significant difference has been found between getting one massive dose of radiation and many small doses. The breast cancer rate of survivors of the Hiroshima and Nagasaki explosions is the same as the rate for U.S. women who get many x-rays. In fact, the U.S. breast cancer rate is greater than Japan's.

- The "normal" probability of getting cancer is 30%. Exposure of 100 rems (the EPA proposal of "acceptible" exposure per working lifetime) adds 3% in men (to 33%) and 10% in women (to 40% probability of contracting cancer).

- There is a latency period for cancer symptoms after a radiation exposure. For example, the leukemia rate in Hiroshima started to increase in 1947 (two years later).



Malignancy rate versus Age for most cancers in normal populations (dotted line) and irradiated populations (solid line).



Malignancy rate versus Age for leukemia in normal populations (dotted line) and irradiated populations (solid line).

- For most forms of cancer, the malignancy rate in a population exposed to radiation always remains higher than the standard population levels. Leukemia is an exception, but most textbooks use leukemia as the model, as though it is the only "important" cancer.

- All predictions of the cancer rate in Hiroshima and Nagasaki were too low. This includes information that as we get older, we get more cancer anyway. Dr. Radford predicted that since the Japan data is so high, people will start looking at other studies with lower rates. ( Hiroshima cancer rate is still going up. )

- After a 10,000 megaton nuclear war nearly every survivor would get a cancer of some sort.

- Dr. Radford felt that the worst accident scenario involving an ionizing smoke detector would occur if a child attempted to take one apart. Ionizing smoke detectors contain Americium 241, one of the most potent toxins.

- The NRC recommends that the smoke detectors be sent back to the manufacturer when their usefulness expires since the Americium 241, which has a half-life of 458 years is still nearly as dangerous as it was when the detector was new. They didn't require it because they felt it unenforceable. "It's Catch - 22."

- 7 - 8 rads is enough to cause thyroid cancer.

- There is some evidence that radiation from microwave ovens causes cell damage apart from damage done by the heat, but it is very controversial ( emphasis is Dr. Radford's ).

- Uranium miners "**are** in deep trouble." Mill takings ( leftovers ) give Radon exposures to anyone nearby. Radon is known to cause lung cancer ( another reason aside from contamination of NYC water to keep the oil companies from mining Uranium in the counties north of here ).

- The nuclear industry "did not respond to the Three Mile Island accident in a tough, positive way. There is no quality control."

- There is still no long-term solution to waste storage. Dr. Radford feels "it's possible to **dispose** of waste, but I haven't seen any proposal I like." Waste must not be put in any place where it cannot be checked on.

The Beir report that Dr. Radford was chairperson of created quite a controversy. One intention of the expert committee was to find out if the ratio of cancer to radiation exposure is exponential or linear. The physicists and physicians argued over the subject, and when the data was compiled the **debate** became even more emotional ( keep in mind that these scientists were to deal objectively with the facts ). Physicists insisted that the true curve was exponential. This would mean that a very low dose is harmless, or nearly so. Evidence is mounting that no dose is harmless, even a low one. "I have no faith in expert committees anymore," Dr. Radford told us. "They can get any report on these committees depending on who they have on them." His suggestion was to simply have the data of committees published, not just the conclusions. That would promote honesty.

We do not know the limits of the problems of low-level radiation. In other words, the problem is getting worse all the time and there is no way of knowing how bad it will get.

# One-liners

No new nuclear plants have been ordered since the Three Mile Island accident in March, 1979.

Electricity for nuclear plants installed after 1974 costs 20 - 40% more than that produced by new coal plants.

The United States government admits it has lost track of several hundred pounds of weapons-grade plutonium and uranium.

The nuclear waste from nuclear power plants is four times more radioactive than waste from nuclear weapons production.

By 1955, there were already 240 patents involving solar energy.

In 1981, over 80,000 nuclear power industry employees were exposed to record-high radiation levels.

For every 100 kilowatt hours of nuclear power, 95 kwh of other energy must be used.

There were 4,060 mishaps at the 74 operating nuclear reactors in the U.S. in 1981. The NRC called 140 of them "especially significant."

There have been 143 wrong signals on the U.S. Advance Warning System.

The Federal budget for 1982 provided more money for military bands than it did for all solar and conservation programs combined.

In his Atlantic Monthly interview, David Stockman admitted that he had not cut the subsidy for the Clinch River Breeder Reactor as he had wished, because the Dministration's economic package "will go nowhere without Senator Howard Baker, and Clinch River is just life or death to Baker. A very poor reason, I know."

Three people died at an Idaho nuclear power plant in 1962.

The people of Queens stopped a nuclear power plant from being built in Long Island City in the '60s.

Construction of 44 nuclear plants was delayed in 1981 alone.

About 80% of nuclear waste comes from nuclear weapons production.

The average capacity for nuclear plants in 1981 was only 59% of what they were originally designed to generate.

For every $1 million saved in energy costs, $2.4 million is generated in local economic activity.

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## Rads & Rems

One roentgen is the amount of radiation emitted by one gram of radium. One rad (radiation absorbed dose) is the amount of energy something receives from radiation. One rem, which is an abbreviation for roentgen equivalent man, measures the amount of damage to humans that will be caused by one roentgen of radiation. When the radiation source is inside the body, rems are greater than rads because rems measure biological effects rather than just the amount of energy. A rad of alpha radiation is approximately 30 rems. A rad of beta radiation is approximately ten rems. A rad of gamma radiation is approximately equal to one rem.

The machine is your friend. This is the age of the machine. But who will operate it? We are, of course, referring to the typewriter and we need more fingers to play at the controls. Blessed is he/she who can and will type.

## Disorderly Conduct

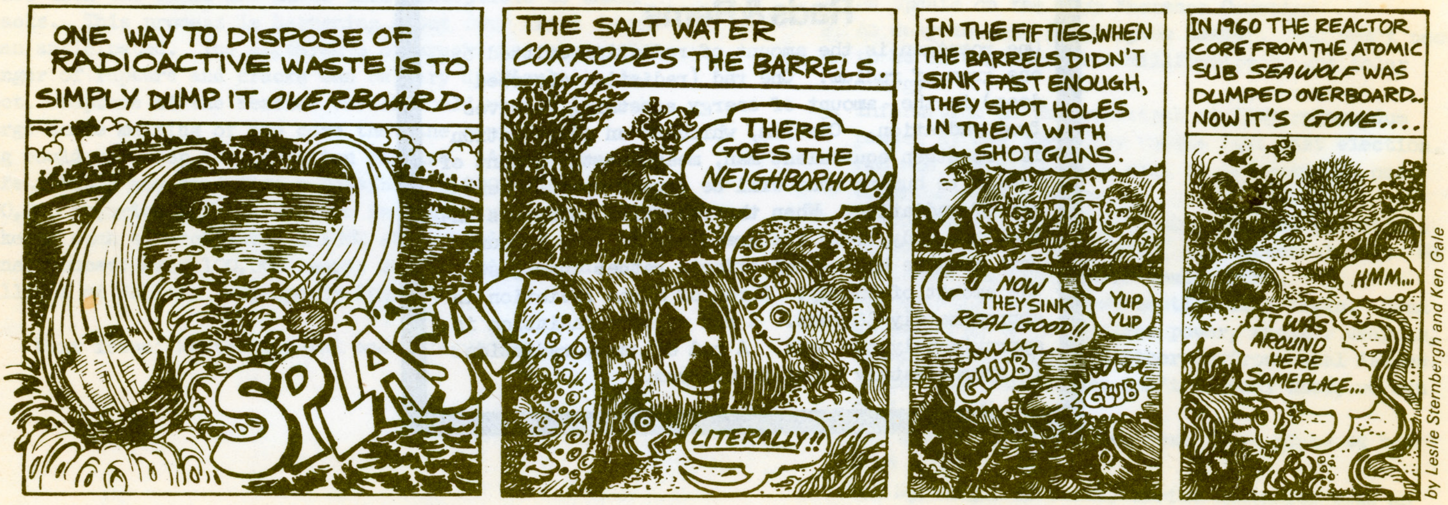
When you read about civil disobedience, does your mind conjure up images of cops busting heads and kids rotting in jail for weeks? Do you think of violent clashes between the National Guard and angry hippies? Then put aside those media images of the 60s. Civil disobedience of 1982 just isn't like that. Think about the reports you saw or heard of the June 14th "Blockade the Bombmakers" at the UN missions. No violence. Almost all people arrested were released that evening. And they certainly didn't fit the media image of "hippy." True, most of the people who do CD are under 30, but many are well more than twice-30.

By now you're probably wondering what CDers are charged with. After all, when you do civil disobedience, it's what you'll be charged with. Usually, the charge is "disorderly conduct." Occasionally, it's "creating a disturbance" or "trespassing." It's a misdemeaner (a traffic ticket is a misdemeaner, too). You get held for a short time, "booked" and are released to appear in court at a later date. The more people doing CD, the faster the "authorities" wish to get rid of them. And the shorter the period of time you are held.

Civil disobedience is a commitment to the issue. The key to CD is commitment and training. We'll go into it more in the next issue of New Rising Sun. All of you are invited to send in your opinions on civil disobedience - both for and against, whether you've ever done CD or not. For more information, before the next issue, give us a call: 772-3142.

# Project Splash

## Irresponsible disposal proposal


ONE WAY TO DISPOSE OF RADIOACTIVE WASTE IS TO SIMPLY DUMP IT OVERBOARD.
SPLASH!
THE SALT WATER CORRODES THE BARRELS.
THERE GOES THE NEIGHBORHOOD!
LITERALLY!!
IN THE FIFTIES, WHEN THE BARRELS DIDN'T SINK FAST ENOUGH, THEY SHOT HOLES IN THEM WITH SHOTGUNS.
NOW THEY SINK REAL GOOD!!
YUP YUP
GLUB
GLUB
IN 1960 THE REACTOR CORE FROM THE ATOMIC SUB SEAWOLF WAS DUMPED OVERBOARD.. NOW IT'S GONE....
HMM...
IT WAS AROUND HERE SOMEPLACE...

by Leslie Sternbergh and Ken Gale

# We're Shutting Down Another One

By Ken Gale

All of us living in New York City will be affected if the Shoreham Nuclear Plant goes on line. A major accident would kill most of us. Even a minor accident would have deadly consequences. It's all too likely that an accident will happen, but LILCo wants no outside people to check on the construction and safety of the plant to lower the likelihood of a disaster.

Closing a nuclear power plant is a great example of people uniting and taking back power over their own lives. Pennsylvanians banded together and kept Three Mile Island from reopening. Californians joined to keep Diablo Canyon from starting up. ( See N.R.S. #4.) The people of Indiana and Illinois united and the Bailey floating nuke never went on line. Together we can keep Shoreham from opening.

If Shoreham opens, it will be the first new plant to go on line since Three Mile Island's accident. This would be a serious setback to the entire anti-nuclear movement.

An operating nuclear plant is a perfect target in a war -- nuclear or conventional. An article in Scientific American in 1981 contained a demonstration that a nuclear bomb hitting a nuclear plant would cause ten times the amount of damage it would do by striking another target. A conventional bomb hitting an operating nuclear plant would become a nuclear bomb. The key is "operating" nuclear plant.

A meltdown at a nuclear plant would contaminate an area the size of Pennsylvania (When a 1965 Atomic Energy Commission study discovered this, the results were not released to the public until Friends of the Earth, using the Freedom of Information Act, uncovered the data). Pennsylvania covers 45,333 square miles. Shoreham is only 70 miles from New York City. Lets not allow Shoreham to go on line.

In the case of a substantial radiation leak, the evacuation would be into the five boroughs with all the attendant problems a sudden, large influx of people into a crowded space brings. An accident at Shoreham, and it need not be the worse case, would affect more than just a handful of towns an hour away from the Big Apple.

One reason Shoreham is so far behind schedule is because of poor construction. For example, pipes which are to contain cooling water are supported by the walls. During construction, braces were put around the pipes for additional support because Shoreham is built near an active earthquake fault. The braces were later removed because it was found that the walls would not support the extra weight of the braces during an earthquake. We could easily fill up this entire issue with other examples of dangerous construction flaws. With that type of management, is it any wonder LILCO does not want a full inspection of Shoreham? We are supposed to "trust" them.

The people of New York City, the residents of Long Isalnd and the entire anti-nuclear movement will benefit when we keep Shoreham from operating at all.

## It's Now or Never

Everyone must and together. Everyone! Sitting back now is tantamount to letting LILCO have their way. None of us can afford that. Don't rely on the handful of people who produce New Rising Sun to do everything. Take some direct action yourself! 1900 people banded together to stop the Diablo Canyon Nuclear power plant in California last year. Pacific Gas & Electric Co. spent just as much money to build Diablo Canyon as LILCO spent to build Shoreham. We can stop Shoreham now! L.I. SHAD, NYC SHAD, Peacesmith House, Mobilization for Survival and others are gathering facts and organizing opposition. You, reading this now, must supply the numbers, the commitment and the grassroots. A lack of commitment by you, the public, will effectively tell the nuclear industry that people don't care whether or not they have nuclear power in their back yard. The nuclear industry deserves no such mandate.

What can you do? First of all, help get other people involved. Tell them what's going on, show them this article and have them get in touch with us (772-3142). Second, sign up for CD training. CD, civil disobedience, is how the Abdlone Alliance, Greenpeace, Mothers for Peace, et als. kept Diablo Canyon from opening. We must show the same dedication.

Third, help us organize. We would like to turn this article into a flyer to distribute to people who are not on our mailing list. In addition to this information, we will include facts on how solar energy and conservation - weather-stripping, etc. - would save money and create more jobs than Shoreham (see New Rising Sun #4). We cannot do that kind of outreach without money to print the information and volunteers to distribute our flyers. Anyone who sends us money will receive a free subscription to New Rising Sun. All money will be used to educate and organize. We no longer have to pay rent on an office. Our present staff is all-volunteer. All of our efforts go to stop nuclear madness. A dozen SHAD volunteers can't do it alone. Educate. Organize! Train! Send money! Help every way you can!

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Call or Write
for more info:

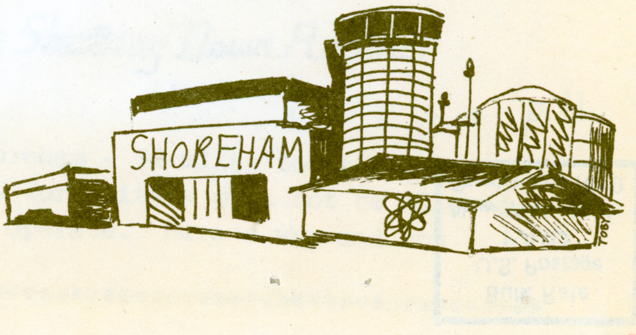
New Address
↓

New York City SHAD Alliance
P.O. Box 279 Rockefeller
Center Station
New York, N.Y. 10185

Telephone-(212)772-3142

Long Island SHAD
333 Terry Road
Smithtown, L.I. 11787

Telephone-(516)360- 0045



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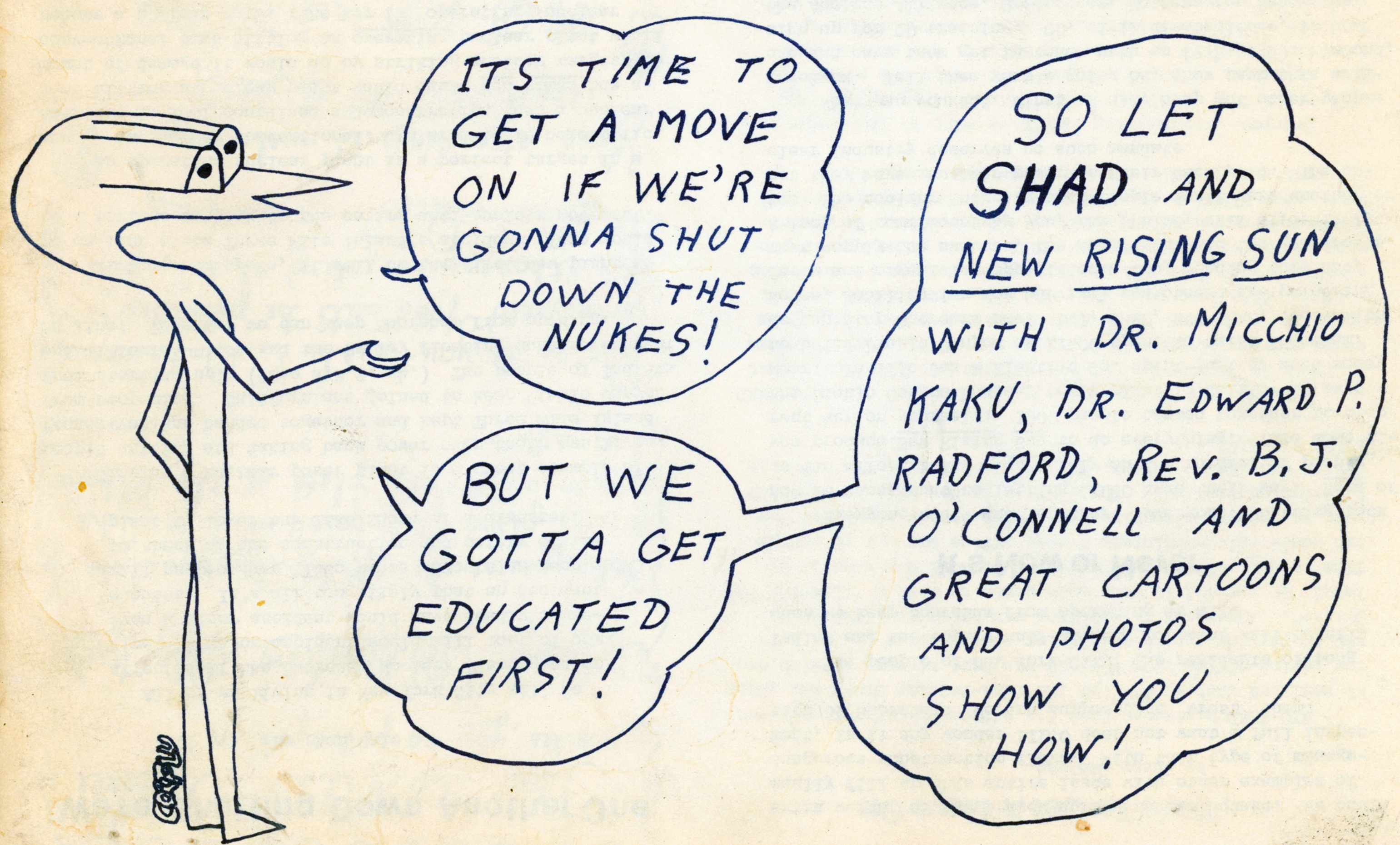
ITS TIME TO GET A MOVE ON IF WE'RE GONNA SHUT DOWN THE NUKES!
BUT WE GOTTA GET EDUCATED FIRST!
SO LET SHAD AND NEW RISING SUN WITH DR. MICCHIO KAKU, DR. EDWARD P. RADFORD, REV. B.J. O'CONNELL AND GREAT CARTOONS AND PHOTOS SHOW YOU HOW!